SUPPORT FOR THE AMENDMENTS

The amendment to Claim 11 is supported by the specification. No new matter is believed to have been added to the present application by the amendments submitted above.

REMARKS

Claims 11, 19-26 and 29-32 are now pending. Favorable reconsideration is respectfully requested.

The present invention relates to an alkyl ether sulfate salt of the general formula I

$$RO\text{-}(CH_2\text{-}CHR^1O)_y\text{-}(CH_2CH_2O)_zSO_3^- M^+ \qquad (I),$$

wherein

R is an i-C_{13} group,

R^1 is methyl,

M^+ is a cation, selected from the group consisting of alkali metals, NH_4^+ and $HNR^2{}_3^+$, where R^2 is selected from the group consisting of unbranched or branched alkyl radicals, CH_2CH_2OH and $CH_2CH(OH)CH_3$,

y has a mean value of 1-2,

z has a mean value of 1-4,

for which the quotient A of the critical micelle concentration cmc

$$A = \frac{\text{cmc } (RO\text{-}(CH_2CH_2O)_zSO_3^- M^+)}{\text{cmc } (RO\text{-}(CH_2\text{-}CHR^1O)_y\text{-}(CH_2CH_2O)_zSO_3^- M^+)} \quad \text{is} > 1.$$

See Claim 11.

The rejection of Claims 11 and 23-29 under 35 U.S.C. §103(a) over Verdicchio et al. is respectfully traversed. Verdicchio et al. fail to suggest the claimed alkyl ether sulfate salt.

In amended Claim 11, an i-C_{13}-group is alkoxylated with 1 to 2 units of propylene oxide, followed by 1 to 4 units of ethylene oxide, followed by a $SO_3^-M^+$-group, where the alkylether sulfate salt has a specific quotient A of the critical micelle concentrations.

In contrast, Verdicchio et al. disclose detergent and cleansing compositions comprising at least one sulfated polyoxy alkylene condensation product and at least one amphotheric surfactant. According to col. 2, lines 19-28, the anionic surfactants of Verdicchio et al., are sulfated polyoxyalkylene condensation products of formula R-O-$(C_3H_6O)_m(C_2H_4O)_nSO_3M$, wherein R is a straight or branched chain alkyl of from about 6 to 10 carbon atoms. Among others, Verdicchio et al. disclose sulfated polyethers, wherein propylene oxide and ethylene oxide units are added t a linear or branched C_{10}-radical.

The difference between the teaching of Verdicchio et al. and amended Claim 11 of the present application is that according to the present application an alkylether sulfate salt of general formula (I) is claimed, which is based on an i-C_{13}-group, wherein Verdicchio et al. disclose corresponding polyether sulfates which are based on linear or branch C_{10}-radical.

According to the Office, this simple amendment of carbon radicals which are the basis for the polyether sulfates according to Verdicchio et al., is obvious for a person having ordinary skill in the art. This argument is not correct.

The use of an i-C_{13}-group instead of a linear or branched C_{10}-group, gives rise to improved properties of the alkylether sulfate salts of general formula (I) as described in the present specification.

This can be shown by the examples which are presented on page 21 and 22 of the present specification.

In the table on page 21, different alkylether sulfates based on 2-propylheptanol, being a branched C_{10}-alcohol according to Verdicchio et al., and alkylether sulfate salts according to amended Claim 11 of the present application, being based on i-C_{13}-alcohol are disclosed. For example in example 2, 2-propylheptanol is alkoxylated with two units of propylene oxide, followed by one unit of ethylene oxide. The cmc, being the critical micelle concentration is at 1.82 mmol/l. A further polyether sulfate according to Verdicchio et al. is

presented as example 3, being 2-propylheptanol being alkoxylated with two units of propylene oxide, followed by three units of ethylene oxide. The cmc which is obtained is 1.67 mmol/l.

In contrast of the results which can be obtained with polyether sulfates according to Verdicchio et al., examples 5 and 6 present alkylether sulfate salts accoarding to amended Claim 11 of the present application, being based on i-C_{13}-alcohol. According to example 5, i-C_{13}-alcohol is alkoxylated with two units of propylene oxide, followed by one unit of ethylene oxide. The cmc which is obtained is at 0.33 mmol/l. According to examples 6, i-C_{13}-alcohol is alkoxylated with two units of propylene oxide, followed by three units of ethylene oxide, giving rise t a cmc of 0.22 mmol/l.

Examples 2 and 5 comprise the same amount of propylene oxide and ethylene oxide, but differ in respect of the alcohol. In addition, examples 3 and 6 correspond in respect of the amount of propylene oxide and ethylene oxide, but also differ in respect of the alkyl radical. For example, if example 2 giving rise a cmc of 1.82 mmol/l is compared to example 5 according to amended Claim 11, the compound according to amended Claim 11 of the present application gives rise to a cmc, which is only the sixth part of the cmc obtained in example 2. If example 6 is compared with example 3, the cmc which is obtained with the compound according to amended Claim 11 of the present application is only the eights part of the cmc which is obtained with example 3. In order to obtain alkylether sulfate salts which may advantageously be used in laundry detergents and/or cleaning compositions, the cmc should be as low as possible, in order to need low amounts of material, being the polyether sulfate, in order to obtain micelles in the aqueous mixture.

The amendment of the branched or unbranched C_{10}-radical of Verdicchio et al. to the specific i-C_{13}-radical according to amended Claim 11 of the present application, has therefore not been obvious, because Verdicchio et al. do not point in the direction that the cmc of the compounds according to the present application can be lowered six or even eight times, compared to the compounds according to Verdicchio et al.

In the Advisory Action dated September 21, 2009, the isodecyl radical of Verdicchio et al. has a methyl group at the second carbon from the end of the chain. This teaching cannot be found in Verdicchio et al. Rather, the reference only teaches that isodecyl radicals are used for the preparation of isodecyl-propoxy(1)-ethoxy(4) sodium sulfate etc. See column 2, lines 49-56 of Verdicchio et al. No further specification of the term "iso" is disclosed in the reference.

For one of ordinary skill in the art, the term "iso" means that a branched chain is present, in contrast to a linear carbon chain, which begins with "n-." Therefore, Verdicchio et al. only teach that branched carbon chains are present in the sodium sulfates which are used in the shampoo-compositions. See, for example, Example II. No further definition of the iso-radical is provided by the reference.

Therefore, a 2-propyl-heptanol radical as mentioned in the comparative examples of the present application falls under the scope of an iso-decyl radical according to Verdicchio et al. 2-propyl-heptanol radicals have 10 carbon atoms and have a 1-propyl substituent in the 2-position. A 2-propyl-heptanol radical is one member of the family of iso-decyl radicals according to Verdicchio et al.

Accordingly, the comparative data present in the specification of the present application clearly shows that iso-C_{13} radicals according to amended Claim 1 of the present application show an improved behavior compared to iso-decyl radicals according to

Verdicchio et al., which are exemplified by 2-propyl-heptanol according to the comparative examples of the present application.

In view of the foregoing, Verdicchio et al. fail to suggest the claimed d alkyl ether sulfate salt. Accordingly, the subject matter of the present claims is not obvious over that reference. Withdrawal of this ground of rejection is respectfully requested.

The rejection of Claims 33 and 38-44 under 35 U.S.C. §103(a) over Weil et al. is believed to be moot in view of the cancelation of those claims. Accordingly, withdraw of this ground of rejection is respectfully requested.

The rejection of the claims under 35 U.S.C. §112, first paragraph, is believed to be obviated by the amendments submitted above. Accordingly, withdrawal of this ground of rejection is respectfully requested.

The rejection of the claims under 35 U.S.C. §112, second paragraph, is believed to be obviated by the amendments submitted above. Accordingly, withdrawal of this ground of rejection is respectfully requested.

Applicants submit that the present application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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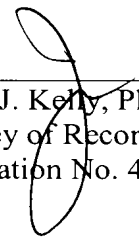

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